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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE	Appl. Serial Number	10/029,200
	Filing Date	12/28/2001
	First Named Inventor	Hee Woong LEE
	Group Art Unit	1742
	Examiner Name	Sikyln IP
	Attorney Docket Number	2957-128
Title: Fe-Cr-Al Alloys for Electric Resistance Wires		

Declaration under 37 CFR §1.132

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

I, Hee Woong Lee, hereby declare as follows:

1. I am the same Hee Woong Lee named as an Inventor on the above-referenced patent application.

2. I understand that an issue has been raised by the Patent Office in connection with this application regarding whether or not the present invention is obvious in view of certain prior art references disclosing alloys containing Fe, Cr, Al, Zr, Ti but not Be.

3. I have personally conducted or overseen experiments during the course of our research on the presently claimed alloys.

4. During those experiments data was gathered that the presently claimed invention has unexpectedly advantageous properties. The table below compares the alloys according to the present invention with prior art Fe-Cr-Al-Zr-Ti alloys used by major resistance wire manufacturing companies:

Table
Chemical and physical comparisons between the presently claimed alloys and conventional alloys

			Present Alloys				Conventional Alloys	
Sample number			1	2	3	4	5	6
Chemical Composition (wt%)	Fe		Bal	Bal.	Bal.	Bal.	AA	BB
	Cr		22	22	22	22		
	Al		6	6	6	6		
	Zr		0.5	0.5	0.5	0.5		
	Ti		0.03	0.03	0.03	0.03		
	Mm (Misch Metal)		0.1		0.1	-		
	Be			0.001	0.001	-		
Physical Properties *1	tensile strength *1 (kgf/mm ²)		55.1			53.5	69.4	69.4
	Elongation *1 (%)		15.0			10.5	19	19
	Electric Resistance (Ω)		42			40.7	44.2	43
	Remarks		For *1 Test Conditions Sample Diameter: 0.2 mm Sample Length: 50mm					

The products 'AA' and 'BB' in Table 1 have basic composition of
Fe:Cr:Al:Zr:Ti=22-24: 4-5: 0.1-0.5:0.03:x wt%

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Table

Chemical and physical comparisons between the presently claimed alloys and conventional alloys

		Present Alloys				Conventional Alloys	
Sample number		1	2	3	4	5	6
Chemical Composition (wt%)	Fe	Bal	Bal.	Bal.	Bal.	AA	BB
	Cr	22	22	22	22		
	Al	6	6	6	6		
	Zr	0.5	0.5	0.5	0.5		
	Ti	0.03	0.03	0.03	0.03		
	Mm (Misch Metal)	0.1		0.1	-		
	Be		0.001	0.001	-		
Physical Properties *1	tensile strength *1 (kgf/mm ²)	55.1	75.5	78.3	53.5	69.4	69.4
	Elongation *1 (%)	15.0	25	27	10.5	19	19
	Electric Resistance (Ω)	42	46.8	48.3	40.7	44.2	43
	Remarks	For *1 Test Conditions Sample Diameter: 0.2 mm Sample Length: 50mm					

The products 'AA' and 'BB' in Table 1 have basic composition of

Fe:Cr:Al:Zr:Ti=22-24: 4-5: 0.1-0.5:0.03:x wt%

5. The table compares the samples of the presently claimed Fe-Cr-Al-Zr-Ti-Be alloys (samples 2 and 3) with Fe-Cr-Al-Zr-Ti alloys of the prior art (samples 5 (AA) and 6 (BB)) and a sample that shares the composition of a presently claimed Fe-Cr-Al-Zr-Ti-

5. The table compares the samples of the presently claimed Fe-Cr-Al-Zr-Ti-Be alloys (samples 2 and 3) with Fe-Cr-Al-Zr-Ti alloys of the prior art (samples 5 (AA) and 6 (BB)) and a sample that shares the composition of a presently claimed Fe-Cr-Al-Zr-Ti-Be alloy, but is devoid of the Be and misch metal components (sample 4). The results presented in the table show that the sample corresponding to the presently claimed Fe-Cr-Al-Zr-Ti-Be alloys have comparatively significant better tensile strength and elongation properties than the prior art samples and the touchstone basic sample 4.

6. Based on the results shown in the above table and other tests that I have performed, I believe that the properties of the presently claimed alloys are superior in terms of heat resistance and hot and cold workability over alloys containing Fe, Cr, Al, Zr and Ti currently used for the production of resistance wires (see samples 5 and 6). The tested "conventional alloys" have, on information and belief, tensile strength and elongation properties comparable to other alloys comprising Fe, Cr, Al, Zr, Ti usable for electric resistance wires.

Declaration by Hee W ong Lee
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7. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

21st Dec 2003
Date

Lee Hee Woong
Hee Woong LEE